

Notice of Allowability

Application No.

10/718,436

Examiner

Andrae S. Allison

Applicant(s)

KUMAGAI ET AL.

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed on 5/2/2007.
2. ☒ The allowed claim(s) is/are 1 and 3-7.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____

JOSEPH MANCUSO
SUPERVISORY PATENT EXAMINER

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The abstract has been amended as follows to remove means language:

(Currently Amended) The present invention comprises an illumination portion (11), and, a light receiving portion (12) having an image sensor (27) which are disposed in a surveying machine body (8), arithmetic ~~means~~ portion (38) for calculating a position of a reflection light image (MO) from a reflector (2) in an area of the image sensor (27) based on a received light of the image sensor (27), a rotation mechanism for rotating the surveying machine body (8) so as to position the reflector (2) on a light receiving optical axis of the light receiving portion (12) based on the position obtained by the arithmetic ~~means~~ portion (38), a storing portion (45) for storing a quantity of light of each pixel in the image sensor (27), and an edge position detecting portion (46) for detecting a beginning edge position (La) and end edge portion (Lb) of the reflection light image (MO) every scanning line in the image sensor (27).

Allowable Subject Matter

2. Kojima discloses a laser surveying system. The laser surveying system comprising a surveying machine body, light projection mechanism unit disposed in said surveying machine body for illuminating a measurement light toward a reflector. Kojima laser surveying system also has a light receiving portion which disposed in said surveying machine body and which has an image sensor for receiving a reflection light image of the measurement light illuminated toward said reflector. The laser surveying system further comprises a CPU for calculating a position of the reflection light image from said reflector in an area of said image sensor based on a received light of said image sensor, a rotation unit for rotating the surveying machine body in a horizontal and vertical direction so as to position said reflector on a light receiving optical axis of said light receiving portion based on the position obtained by the CPU and a data recorder for storing a quantity of light at each pixel in said image sensor. Kojima also teaches an edge position detecting portion for detecting a beginning edge position and an end edge position of said reflection light image at each scanning line in the image sensor however does not mention wherein the CPU calculates the quantity of light at each pixel from said storing portion in accordance with an output of said edge position detecting portion and calculates positions of the weighted average in horizontal and vertical directions of said reflection light image from a horizontal pixel position and a vertical pixel position. Matsunaga discloses image processing device that includes an edge detection portion and a CPU that calculates the quantity of light at each pixel from said storing portion in accordance with an output of said edge position detecting portion and calculates

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positions of the weighted average in horizontal and vertical directions of said reflection light image from a horizontal pixel position and a vertical pixel position. However, neither Kojima or Matsunaga teach wherein the laser surveying system reads out the quantity of light at each pixel from said storing portion, and obtains a width between said beginning edge position and said end edge position at each scanning line after calling out the positions from said edge position detecting portion, and decides the scanning line corresponding to the widest line as the position of the weighted average in the horizontal direction, and calculates the position of the weighted average in the vertical direction of the reflection light image based on the quantity of light of the pixel which is existed between said beginning edge position and said end edge position in the scanning line corresponding to the widest line. The examiner finds no reason or motivation to combine the above references in an obvious rejection thus placing the application in condition for allowance.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statements of Reasons for Allowance."

Conclusion

The prior art made part of the record and not relied upon is considered pertinent to applicant's disclosure.

Purrazzella (US Patent No.: 5,600,123) is cited to teach high resolution extended field of view tracking apparatus and method.

Bowen et al (US Patent No.: 5,770,850) is cited to teach a sensor array tracking and detection system having an alignment positioner.

Inquires

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrae S. Allison whose telephone number is (571) 270-1052. The examiner can normally be reached on Monday-Friday, 8:00 am - 5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

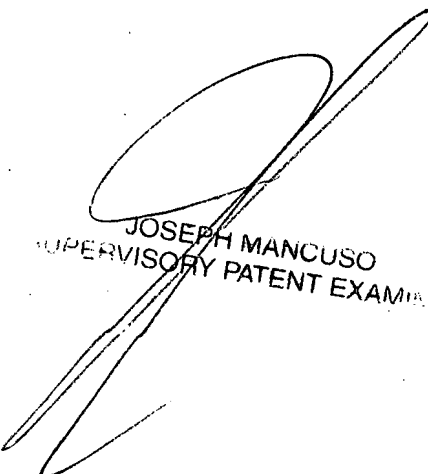
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrae Allison

May 8, 2007

A.A.


JOSEPH MANCUSO
SUPERVISORY PATENT EXAMINER